

## **Explanation of Specification Revisions**

**Project:** Facilities Support Center, NASA DFRC  
**Phase:** Addendum 4 (Delta 2)

**The following revisions have been made to clarify LEED requirements and in response to bid RFIs:**

TABLE OF CONTENTS – updated to include revised section numbers

### **SPEC SECTION 01 33 29 LEED (tm) DOCUMENTATION**

1. Updated Section 1.1. References to include references and requirements listed in the LEED Reference Guide that are necessary for credit achievement.
2. Section 1.4 LEED Implementation Plan: clarified that the LEED Implementation Plan shall be submitted prior to the start of the construction submittal and review process.
3. Added Section 1.5 regarding Indoor Environmental Quality Control Credit 4 for low-emitting materials credit compliance.

### **SPEC SECTION 01 74 19 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT**

1. Revised Section 1.2 Government Policy to require a minimum of 95 percent by weight of all project solid waste to be diverted from the landfill (instead of 35 percent as previously required), in accordance with the LEED Reference Guide and the project LEED strategy to achieve a rating of Platinum.

### **SPEC SECTION 03 30 00 CAST-IN-PLACE CONCRETE**

1. Updated Section 1.7.1 Submittals for Environmental Performance to clarify items to be included in the LEED Documentation Notebook (recycled content, local materials, and FSC certified wood credit requirements.)
2. Added Section 1.8.3 Materials Containing Recycled Content to provide additional clarification for LEED credit requirements regarding recycled content of concrete materials.

### **SPEC SECTION 04 20 00 MASONRY**

1. Added Section 1.3 Environmental Data to provide additional clarification of LEED credit compliance options for masonry materials, such as recycled content, local/regional content, rapidly renewable materials content, and low-emitting materials requirements.
2. Updated Section 1.5.3 Cementitious Materials, Sand and Aggregates to provide more specific information regarding cementitious materials such as fly ash, which can consist of post-industrial recycled content and be used in grout and concrete.
3. Updated Sections 2.2 Concrete Masonry Units (CMU) and 2.2.1 Aggregates to require a minimum of 18 percent post-industrial recycled content.
4. Revised Section 2.11 Expansion Joint Materials to specify that the maximum volatile organic compound (VOC) content shall be in accordance with the LEED requirements for achievement of the low-emitting materials credit.

#### SPEC SECTION 05 12 00 STRUCTURAL STEEL

1. Added Section 1.8 Environmental Data to provide additional clarification regarding recycled content of many steel products, as a way to achieve the LEED recycled content materials credit.

#### SPEC SECTION 05 52 00 METAL RAILINGS

1. Revised Section 2.6 and added a new Section 2.6.1 "Steel Railings and Handrails." Added further clarification on sizes and specifications of the steel handrail, railings, and posts.

2. Changed Section 2.6.1 Steel and Cable Handrails to Section 2.7 "Steel and Cable Railings" and added additional information clarifying the specifications and sizes of the steel handrail and posts, and the stainless steel cable infill railing.

3. Added a requirement that the stainless steel cable shall contain a minimum of 70 percent post-industrial recycled content, and noted that the end fittings could contain up to 75% post-industrial and 50% post-consumer recycled content.

#### SPEC SECTION 06 41 16.00 LAMINATE CLAD ARCHITECTURAL CASEWORK

1. Updated Section 1.1 References to include the Forest Stewardship Council (FSC), Green Seal (GS) Standard GS-36, SCAQMD Rule 1168 and the USGBC LEED-2009 Reference Guide.

2. Updated Section 1.2 System Description to include information regarding local/regional materials, Greenguard Indoor Air Quality certification, FSC-certified wood products, and documentation requirements for recycled content and rapidly-renewable materials.

3. Updated Section 2.1.2 Panel Products to require FSC-certification and products containing no added urea-formaldehyde, in accordance with LEED credit requirements.

4. Added additional information to Section 2.1.2.2 clarifying that particleboard can contain recycled content and/or rapidly renewable materials.

5. Added additional information to Section 2.1.2.3 clarifying that medium density fiberboard (MDF) can contain recycled content and/or rapidly renewable materials.

6. Updated Section 2.2 High Pressure Decorative Laminate (HPDL) to require plastic laminates containing a minimum of 15 percent post-industrial recycled content and a minimum of 9 percent rapidly renewable material content.

7. Updated Section 2.7.1 Adhesives to comply with the requirements of LEED low emitting materials credit having VOC content less than the limits of GS-36 and SCAQMD Rule 1168. Sections 2.7.2 Caulk and 2.7.3 Sealant were also updated accordingly.

8. Revised Section 2.9.6 Laminate Clad Countertops to "Countertop Substrate." Countertops shall be in accordance with Section 12 36 00 COUNTERTOPS and the finish schedule on the drawings. Countertop substrate shall be constructed of MDF.

9. Removed Sections 2.9.6.1 Edge Style, 2.9.6.2 Laminate Clad Splashes, and 3.1.2 Countertops. Countertops, edge style, and backsplashes are described in Section 12 36 00 COUNTERTOPS.

#### SPEC SECTION 07 42 13 METAL WALL PANELS

- \_1. Updated submittals to include LEED documentation of recycled content and low-emitting materials credit requirements.
2. Removed the requirement for providing steel panels containing a minimum of 80% recycled content from Section 1.6.1 Pre-Installation Conference, Subsection "c." Added a subsection "d." requiring a minimum recycled content of 25% post-consumer and 5% post-industrial recycled content.
3. Updated Section 2.2.2.4 Interior Finish Coating to require low-VOC coatings complying with LEED low-emitting materials requirements.

#### SPEC SECTION 07 54 19 THERMOPLASTIC POLYEOLEFIN (TPO) ROOFING

- \_1. Updated Section 1.1 References to include SCAQMD Rule 1168 and the USGBC LEED-2009 Reference Guide.
2. Updated submittals to include LEED documentation of TPO Roofing Membrane relative to the heat island credit and SRI levels. Also added submittal requirements for bonding adhesives to comply with LEED low-emitting materials credit requirements.
  - a. Updated Section 2.1.1 Bonding Adhesive to require compliance with SCAQMD Rule 1168, in accordance with LEED requirements.
  - b. Added Section 2.2.1 Color Finish requiring the TPO roof membrane to have a min. SRI of 78.

#### SPEC SECTION 07 61 14.00 20 STEEL STANDING SEAM ROOFING

- \_1. Updated Section 1.1 References to include SCAQMD Rule 1168 and the USGBC LEED-2009 Reference Guide.
2. Updated submittals to include LEED documentation of the metal roofing panels, relative to the heat island credit and SRI levels, as well as recycled content. Also added submittal requirements for sealants to comply with LEED low-emitting materials credit requirements.
3. Revised Section 2.1.1 Material to specify galvanized steel instead of zinc-coated and removed the option for aluminum-zinc alloy coated steel.
4. Updated Section 2.1.3 Finish to reference Section 09 06 90 COLOR SCHEDULE. Added clarification to Section 2.1.3.1 Factory Color Finish requiring a SRI of 45, but no less than 29, in compliance with LEED heat island effect credit requirements. Also added finish specifications requiring a factory-applied non-weathering polyvinylidene fluoride Kynar 500 finish.
5. Added Section 2.1.4 Environmental Data to address the high recycled content typical of steel products, and requiring steel roofing panels to contain a minimum of 25% post-consumer and 5% post-industrial recycled content.
6. Updated Section 2.4.3 Sealants to comply with SCAQMD Rule 1168 in accordance with the LEED low-emitting materials credit requirements.

#### SPEC SECTION 07 92 00 JOINT SEALANTS

1. Updated Section 1.1 References to include SCAQMD Rule 1168 and the USGBC LEED-2009 Reference Guide.
2. Updated submittals to include LEED documentation for sealants to comply with LEED low-emitting materials credit requirements.
3. Updated Section 2.1.1 Interior Sealant, Section 2.1.3 Floor Joint Sealant, Section 2.1.4 Acoustical Sealant, Section 2.1.5 Preformed Sealant and Section 2.2 Primers to require compliance with SCAQMD Rule 1168, in accordance with LEED low-emitting materials requirements.

#### SPEC SECTION 08 14 00 WOOD DOORS

1. Updated Section 1.1 References to include the Forest Stewardship Council (FSC), Green Seal (GS) Standard GS-36, SCAQMD Rules 1168 and 1113, and the USGBC LEED-2009 Reference Guide.
2. Updated Section 1.2 Submittals to clarify items to be included in the LEED Documentation Notebook, relative to local/regional materials, rapidly renewable materials, FSC certified wood, and LEED low-emitting materials credit requirements.
3. Added Section 1.5.1 Certified Wood requiring all wood products to be FSC-certified, in accordance with LEED requirements.
4. Added a requirement to Section 2.1 Doors that all doors shall contain no added urea-formaldehyde resins, in accordance with LEED credit requirements.
5. Updated Sections 2.3.2 Preservative Treatment, 2.3.3 Adhesives and Bonds, 2.3.5 Finishes, and 2.3.6 Water-Resistant Sealer requiring compliance with LEED low-emitting materials credit requirements.

#### SPEC SECTION 08 33 23 OVERHEAD COILING DOORS

1. Revised wind loading pressure to 20 pounds per square foot – section 1.3.1.
2. Revised material and finish requirements in section 3.2 to be consistent with Addendum 3.

#### SPEC SECTION 08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

1. Revised section number to 08 41 13
2. Removed Sections 1.1 Summary and 1.2 Section Includes as this information was not relevant.
3. Removed references to the Florida building codes.
4. Removed reference to the manufacturer Kawneer in Section 1.4.2 Structural.
5. Removed Section 1.4.2.2 Forced Entry as it was not relevant to the project.
6. Removed Section 2.1 Manufacturers and 2.2 Alternate Manufacturers as the information did not apply to this project.

7. Revised Section 2.3.1.1 Material Standard to reference door dimensions as indicated on the drawings, and to reference Section 08 11 16 ALUMINUM DOORS AND FRAMES.

8. Removed reference to Dow Corning structural silicone sealant under section 2.3.1.2 Tolerances.

9. Revised Section 2.4.3.4 Panic Device to specify manufacturer's standard panic hardware instead of a specific manufactured product as previously listed.

10. Added to Section 2.6.1 Entrance System Fabrication a reference to Sections 08 11 16 ALUMINUM DOORS AND FRAMES and 08 51 13.00 40 ALUMINUM WINDOWS.

#### SPEC SECTION 08 44 00 INSULATED TRANSLUCENT FIBERGLASS WALL PANEL UNITS

\_1. Revised section 2.2.1 a-d describing panel performance characteristics

#### SPEC SECTION 08 81 00 GLAZING

1. Added SD-03 Product Data and SD-11 Closeout Submittals requirements for LEED documentation, under Section 1.2 Submittals. Insulating glass and glazing accessories can be local/regional materials and VOC content of sealants must be documented.

2. Added Section 1.6 Local/Regional Materials clarifying specific LEED requirements for materials locally harvested and manufactured.

3. Revised Section 2.2 Insulating Glass Units to specify 1/4" thick panes of glass separated by 1/2" gas cavity filled with air, with a SHGC of 0.19 maximum and a U-factor of 0.29 maximum. The glass coating shall provide a maximum visible light transmittance of 22% and a maximum reflectance of 31%.

4. Revised Section 2.3.3 Sealants to clarify that all interior sealants must comply with LEED low-emitting materials credit requirements.

5. Removed Section 2.4 Mirror Accessories, as these are not included in the project.

6. Removed Section 3.3 Additional Requirements for Glazing Control Tower Windows as this project does not involve a control tower.

#### SPEC SECTION 09 06 90 COLOR SCHEDULE

\_1. Revised Section 2.2.1.2 Concrete Masonry Units to specify Angelus Block color "Merlot" (for accent CMU "B", as per updated Finish Schedule.) Also updated Sections 2.2.2.1 and 2.2.2.2 accordingly (paint to match CMU "B".)

2. Updated Section 2.2.1.4 Glass and Glazing as follows:

- A. Kalwall, "Crystal/Crystal"
- B. Solarban R100 "Optiblue" Coating
- C. Solarban R100 "Optiblue" Coating

3. Updated Section 2.2.4.1 Carpet Tile to specify Milliken Carpet, "Plan A" Collection, "P6676 Go To" Design, "311 Feather" color.
4. Updated Section 2.2.4.2 to specify Linoleum Composition Tile (not Vinyl) in the following colors: Forbo Marmoleum MCT color "MCT-713 Calico" (Field) and color "MCT-629 Eiger" (Accent)
5. Updated Section 2.2.4.1 Resilient Base and Moldings to specify Forbo "C94 Dark Bisque."
6. Updated Sections 2.2.6.2 and 2.2.6.3 to specify Dale Tile "Atlantis" as the accent color, in accordance to the Finish Schedule.
7. Updated Section 2.2.7.1 A. Acoustical Units to specify USG "Radar Clima Plus", White, in accordance with the Finish Schedule.

#### SPEC SECTION 09 30 00 CERAMIC TILE

1. Revised Section 2.1 Tile requiring a minimum of 15% post-consumer recycled content (instead of 10% as previously required.)
2. Revised Section 2.1.1 Ceramic Tile to specify glazed ceramic tile (not unglazed porcelain) with a minimum of 40% (not 70%) post-industrial recycled content.

#### SPEC SECTION 09 51 00 CEILING SYSTEMS

1. Changed title of spec section 09 51 00 ACOUSTICAL CEILINGS to "CEILING SYSTEMS."
2. Revised Section 1.2 System Description to apply to all ceiling types, not just acoustical units.
3. Revised Section 1.8 Warranty to refer to "ceiling panels" instead of acoustical units and "suspension system" instead of grid system.
4. Revised Sections 2.1 Ceiling Units, 2.5 Finishes, 2.6 Colors and Patterns, 3.1 Installation, and 3.1.2 Wall Molding to refer to "ceiling units", instead of acoustical units.
5. Revised Section 2.1.3 Acoustical Units for Exposed-Grid Systems as follows:
  - c. Pattern: CD
  - e. Minimum Light Reflectance Coefficient: LR-1, 0.84 or greater (instead of 0.75)
  - f. Nominal Size: 24 by 24 by 3/4 inch to match Finish Schedule and RCP
6. Clarified Section 2.1.4 as "Metal Panels" for Curved Grid System.
7. Added new Section 2.1.5 Metal Panels for Concealed Suspension System with specifications for the flush steel soffit panel system to be installed at the main lobby entrance ceiling.
8. Added a new Section 2.2.3 Concealed Suspension System with specifications for the concealed suspended furring system for the metal soffit panel ceiling.
9. Revised EPA website database link in section 2.1.1.b

#### SPEC SECTION 09 65 00 RESILIENT FLOORING

1. Added Section 1.2.3 Environmental Data to clarify items to be included in the LEED Documentation Notebook, relative to local/regional materials, rapidly renewable materials, and LEED low-emitting materials credit requirements.

2. Replaced Section 2.1 Vinyl Composition Tile with "Linoleum Composition Tile. Added requirements for LCT, including size, materials, ADA, and LEED. LCT shall contain a minimum of 65% rapidly renewable materials and shall meet the LEED low-emitting materials credit requirement of being FloorScore certified.

3. Revised Section 2.2 Wall Base to require a minimum of 10% natural rubber, a rapidly renewable material. Removed the requirement for containing 90% post-consumer recycled content.

4. Revised Section 3.4 title to reference Linoleum Composition Tiles and not vinyl composition or solid vinyl tiles. There shall be no vinyl tiles as part of this project.

#### SPEC SECTION 09 68 00 CARPET

1. Added requirements to Section 1.3 Regulatory Requirements, in accordance with LEED credit achievement. For example, added submittals of certificates and reports documenting compliance with recycled content and low-emitting materials.

2. Updated Section 2.1 Carpet to require all carpet to be PVC free. Also added reference to Section 09 06 90 COLOR SCHEDULE for carpet pattern and color.

3. Updated Section 2.1.2.1 Modular Tile Carpet to include the following requirements:

- a. Carpet Construction: Tufted
- b. Type: Modular tile no less than 18x18 inch square (instead of 24x24 inch square)
- c. Pile Type: Textured Loop Pile
- d. Pile Fiber: Nylon staple, Type 6,6. Removed requirement for recycled content.
- e. Gauge or Pitch: 1/8 per inch
- f. [Added Subsection] Stitches or Rows/Wires: Minimum 14 per inch
- g. [Added Subsection] Pile Thickness: 0.09 inch average
- h. [Added Subsection] Pile Density: 8,400
- i. [Previously Subsection f.] Finished Pile Yarn Weight: Minimum 21 ounces per square yard, not including weight of backings.
- j. [Previously Subsection g.] Backing Materials: Added requirement for providing a carpet backing with a minimum 15% post-industrial and minimum 10% post-consumer recycled content by weight.

4. Updated Section 2.2 e. to require a minimum 4 grey scale rating after 80 hours (instead of 40 hours as previously required.)

5. Revised Section 2.3 Carpet Pads to require a polyurethane foam cushion, instead of a sponge rubber pad.

6. Renamed Section 2.3.1 Recycling Requirements and Section 2.3.2 Carpet Cushion. Replaced Section 2.3.2 Carpet Cushion with requirements for a PVC-free polyurethane foam pad containing a minimum of 85% recycled content.

7. Removed requirement for a vinyl base from Section 2.5 Base, and replaced "straight" style with "cove."

8. Updated Section 2.6 Adhesives and Concrete Primer to require VOC content limits to be in accordance with the LEED low-emitting materials criteria. Added an option for an approved adhesive-free application method or product to be used, as recommended by the manufacturer.

9. Updated Section 2.7 Tape to comply with LEED low-emitting materials credit requirements.

10. Revised tile pattern in Section 3.4.1 Modular Tile Installation to be laid in a monolithic (not alternating) pattern.

#### SPEC SECTION 10 21 13 TOILET COMPARTMENTS

\_1. Removed the word "metal" from Section 1.2 System Description. The toilet partitions are not metal, but rather HDPE as per the Finish Schedule.

2. Deleted Sections 2.1.1 Galvanized Steel Sheet and 2.1.2 Sound-Deadening Cores, as they do not apply to HDPE partitions.

3. Revised Section 2.1.5.1 General Requirements, Subsection a.) to specify corrosion-resistant steel hardware. Removed subsections b.) and c.) and references to brass or aluminum hardware.

4. Revised Sections 2.2.1 Toilet Enclosures and 2.2.2 Urinal Screens to specify high-density polyethylene (HDPE) partitions containing a 100% post-consumer and/or post-industrial recycled content. Removed requirement for 100% recycled steel.

5. Updated Section 2.6 Hardware to specify HDPE or stainless steel door latches and corrosion-resistant stainless steel wall mounting brackets (not plastic or aluminum.)

6. Updated Section 2.7.1 Colors to coordinate with Section 09 06 90 COLOR SCHEDULE, and removed Section 2.7.2 Finishes No. 1 Through No. 3.

7. Removed Section 3.2 Metal Partition Fabrication, as the partitions are to be made from HDPE.

#### SPEC SECTION 10 28 13 TOILET ACCESSORIES

\_1. Added Section 1.2 System Description to include additional clarification and documentation requirements for complying with LEED requirements addressing local/regional materials and recycled content.

2. Removed Section 2.2.3 Mirror, Metal (MM) as this product is not used on this project.

3. Added new Section 2.2.4 Towel Hook providing for satin-finish hooks with concealed attachments.

4. Updated Section 2.2.5 Combination Towel Dispenser/Waste Receptacle to require a capacity of 600 sheets (instead of 400) and dispenses one towel at a time. Revised waste receptacle capacity to hold 15

gallons instead of 18. Added a requirement for the stainless steel unit to contain a minimum of 50% recycled steel.

5. Replaced Sections 2.2.7 Toilet Tissue Dispenser (TTD) and 2.2.8 Toilet Seat Cover Dispenser (TSCD) with new Section 2.2.7 "Combination Seat Cover/Tissue Dispenser/Waste Receptacle (TSCTDWR)." This section requires the installation of a stainless steel combination unit with a minimum capacity for 500 seat covers and 2 standard tissue rolls.

6. Added new Section 2.2.8 Folding Shower Seat (FSS) with provisions for a stainless steel ADA-compliant folding shower seat.

#### SPEC SECTION 10 51 13 PLASTIC LOCKERS

1. Added requirement under Section 2.1 Lockers for lockers to contain a minimum of 100% post-consumer and/or post-industrial content.

2. Updated Section 2.2.2 Colors and Finishes to coordinate with Section 09 06 90 COLOR SCHEDULE.

#### SPEC SECTION 12 36 00 COUNTERTOPS

1. Updated Section 1.1 References to include the Green Seal (GS) Standard GS-36, the Greenguard Environmental Institute (GEI), Scientific Certification Systems (SCS), SCAQMD Rule 1168, and the USGBC LEED-2009 Reference Guide.

2. Added Section 1.2 System Description to include specifications relating to LEED documentation and credit requirements, specifically local/regional materials, recycled content, rapidly renewable materials, and low-emitting materials.

3. Revised Section 1.4 Design to specify prefinished densified solid surface countertops instead of polyester resin, in accordance with the Finish Schedule.

4. Revised title of Section 2.3.1 to "Solid Surface Countertops and Backsplashes." Updated section to specify integrated seamless lavatories where indicated on the drawings.

5. Updated Sections 2.5.1 Mounting Adhesives and 2.5.2 Joint Sealants to include requirement to comply with LEED low-emitting materials credit requirements.

6. Revised Sections 2.5.3 Solvent and 3.1.2 Permanent Installation to reference solid surfacing, not quartz surfacing.

#### SPEC SECTION 12 48 13.13 ENTRANCE MATS

1. Updated Section 1.2 Submittals with items to be included in the LEED Documentation Notebook, relative to local/regional materials, recycled content and low-emitting materials credit requirements.

#### SPEC SECTION 23 09 23.13 20 BACNET DIRECT DIGITAL CONTROL SYSTEMS FOR HVAC

1. Updated section 2.1.a & 2.1.b with additional information on existing control system that will interface with new system.

SPEC SECTION 44 40 10 WATER REUSE SYSTEM

1. Updated section numbers at footer to be consistent with section title